

REMARKS

Claim Status

Claims 1, 2, 8-10, 12 and 18 are presented for examination, with claims 1, 8 and 18 being in independent form. Dependent claims 19-21 have been canceled. Claims 1, 8 and 18 have been amended to incorporate the features of canceled dependent claims 19, 20 and 21, respectively. No new matter has been added. Reconsideration of the application, as amended, is respectfully requested.

Overview of the Office Action

Claims 1, 4, 6, 8, 10, 12 and 18-21 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,830,494 (“Yamazaki”) in view of U.S. Publication No. 2002/0045030 (“Ozin”), while claims 2 and 9 stand rejected as unpatentable over Yamazaki in view of Ozin, and further in view of U.S. Patent No. 6,630,785 (“Lu”).

Applicants have carefully considered the Examiner’s rejection, and the comments provided in support thereof, and respectfully disagree with the Examiner’s analysis. For the reasons which follow, it is respectfully submitted that all claims of the present application are patentable over the cited art.

Patentability of the Amended Independent Claims over the Prior Art Under 35 U.S.C. §102

Independent claims 1, 8 and 18, as amended, are now directed to a method of depositing material on a substrate layer, wherein the material comprises light emitting polymers or conducting polymers. Thus, independent claims 1 and 18 recite “wherein a stacked layer is formed by repeating step (b) with a different solution containing a different material, before

removal of said cover layer, or by after step (c), repeating steps (a)(ii), (b) and (c) with a different solution containing a different material". Independent claim 8 recites "wherein a stacked layer is formed by repeating step (b) with a different first solution containing a different first material and step (e) with a different second solution containing a different second material, before removal of said cover layer, or by after step (c), repeating steps (a)(ii), (b) and (c) with a different first solution containing a different first material and, after step (f), repeating steps (d), (e) and (f) with a different second solution containing a different second material". Independent claim 18 further recites "and, after step (f), repeating steps (d), (e) and (f) with a different second solution containing a different second material". Amended independent claims 1, 8 and 18 therefore define methods for producing stacked, structured layers on a substrate layer, where the material comprises light emitting polymers or conducting polymers. No new matter has been added.

Yamazaki teaches a process for forming an EL layer using an ink-jet method (see Abstract). In particular, *Yamazaki* (col. 5, lines 5-17; FIG. 4) teaches that EL layers are formed in a pixel portion, which are surrounded by separation layers, by discharging an EL forming liquid containing a EL material from an ink head (col. 5, lines 5 to 17). However, as also noted by the Examiner, there is no teaching or suggestion in *Yamazaki* with respect to the use of capillary forces during the formation of EL layers. Consequently, there is nothing in *Yamazaki* to teach or suggest the use of capillary forces for depositing light emitting material on a substrate in the manner recited and claimed in each of independent claims 1, 8 and 18.

More specifically, the Examiner (at pg. 2 of the Office Action) has acknowledged that *Yamazaki* fails to teach or suggest "pressing a cover layer onto the pattern layer, dipping the

substrate to form EL layers through the capillary action, and removing the cover layer" as recited in amended independent claims 1, 8 and 18, and cites *Ozin* for this feature.

Applicants disagree, however, that the combination of *Yamazaki* and *Ozin* achieves the subject matter of independent claims 1, 8 and 18. There is nothing in *Ozin* to cure the above-noted deficiencies in *Yamazaki* concerning the lack of teachings of applicants' claimed method for producing stacked, structured layers on a substrate layer, where the material comprises light emitting polymers or conducting polymers.

Ozin (paragraph [0119]) discloses methods for producing patterned crystalline colloidal crystals. *Ozin* fails to teach or suggest anything with respect to the use of a method in connection with light emitting polymers or conducting polymers. Therefore, the skilled person would have no reason to consider the teachings of *Ozin* so as to achieve applicants' method that uses capillary forces to deposit light emitting or conducting polymers on a substrate.

Moreover, it is not possible to produce stacked layers using the methods disclosed in *Ozin*. In a first method (i.e., paragraphs [0125] and [0126]), a second method 2 (i.e., paragraph [0144]), a fourth method (i.e., paragraph [0185]) and a fifth method (i.e., paragraph [0190]) of *Ozin*, the use of substrates that are pre-structured is disclosed. In a third method (i.e., paragraph [0170]) and a sixth method (i.e., paragraph [0199]) of *Ozin*, the use of an elastomeric patterned stamp, which is placed on a substrate to create channels on a flat substrate, is disclosed. *Ozin* thus teaches six methods wherein several coating methods are combined with colloidal crystal self-assembly and lithography to produce patterned crystalline colloidal crystals. *Ozin* clearly teaches the use of pre-structured substrates that are completely filled with an aqueous solution. As taught by FIG. 4 and described in paragraph [0150] of *Ozin*, however, there is no patterned surface of the substrate that remains to which a further application of layers can be made.

With respect to the third method, *Ozin* (paragraphs [0170] and [0199]; FIG. 8 and) teaches an additional method in which patterned elastomeric stamps are used to produce structured layers of crystals by completely filling the space between the patterned stamp and the substrate. After such crystal patterns are produced, the stamp is peeled-off from the substrate. Here, the thickness of the stamp controls the channel depth of the crystal pattern produced on the substrate. Independent claims 1, 8 and 18 require, *inter alia*, “repeating step (b) with a different solution containing a different material, before removal of said cover layer, or by after step (c) repeating steps (a)(ii), (b) and (c) with a different solution containing a different material”. In view of the teachings of *Ozin*, it is therefore not possible to produce another patterned layer of crystals, because the area occupied by the crystals, i.e., the space between the stamp and substrate, is completely filled in by the stamp itself, and there is no space for additional material. *Ozin* therefore fails to teach or suggest applicants’ claimed method for producing stacked patterned layers that involves a repetition of steps using different materials. Therefore, *Ozin* fails to teach or suggest now-amended independent claims 1, 8 and 18.

Therefore, the combination of *Yamazaki* and *Ozin* fails to achieve the method of now-amended independent claims 1, 8 and 18 because *Ozin* fails to provide what *Yamazaki* lacks. Independent claims 1, 8 and 18 are accordingly deemed to be patentable over *Yamazaki* and *Ozin* under 35 U.S.C. 103, individually or in combination.

Patentability of Dependent Claims 2 and 9 under 35 U.S.C. §103

The Examiner (at pg. 4 of the Office Action) has acknowledged that *Yamazaki* and *Ozin* fail to teach or suggest “the pattern layer can be selectively removed to define the predetermined region”, as recited in dependent claims 2 and 9, and cites *Lu* for this feature. Applicants

disagree, however, that the combination of *Yamazaki*, *Ozin* and *Lu* achieves the methods of dependent claims 2 and 3. There is nothing in *Lu* to cure the above-noted deficiencies in *Yamazaki* and *Ozin* concerning the lack of teachings of a method for producing stacked, structured layers on a substrate layer.

Lu (col. 2, lines 54-56) describes “a surface treatment process for fabricating a panel of an OLED having relatively high resolution and relatively low thickness”. *Lu* (col. 3, lines 66-67) explains that “the formation of first electrodes can be formed in patterns on [a] substrate through conventional photolithography”. *Lu* (col. 4, lines 6-10) further explains that “[t]he surface treatment process of the present invention can also selectively [contain the] step of forming a plurality of auxiliary electrodes on the substrate through photolithography before forming first electrodes on the substrate”. In addition, *Lu* (col. 4, lines 22-23) explains that “[a] pixel-defining layer can be selectively formed after first electrodes are formed. The pixel-defining layer can be formed in patterns through photolithography”. However, *Lu* is totally silent with respect to the recited steps in applicants’ independent claims 1 and 8 that produce stacked, structured layers on a substrate layer. The combination of *Yamazaki*, *Ozin* and *Lu* therefore fails to teach or suggest the method recited in independent claims 1, 8 and 18, let alone in dependent claims 2 and 9. Dependent claims 2 and 9 are accordingly also deemed to be patentable over the combination of *Yamazaki*, *Ozin* and *Lu*.

Dependent Claims

In view of the patentability of independent claims 1, 8 and 18, and for at least the reasons presented above, each of dependent claims 2, 9, 10 and 12 is believed to be patentable therewith

over the prior art. Each of dependent claims 2, 9, 10 and 12 additionally includes features that serve to still further distinguish the claimed invention over the applied art.

Conclusion

Based on all of the above, applicants submit that the present application is now in full and proper condition for allowance. Prompt and favorable action to this effect, and early passage of the application to issue, are solicited.

Should the Examiner have any comments, questions, suggestions or objections, the Examiner is respectfully requested to telephone the undersigned to facilitate an early resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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